

What is claimed:

1. An electro-kinetic air transporter-conditioner system, comprising:
a pin emitter electrode;
a ring collector electrode located downstream from said emitter electrode;
a driver electrode located at least partially within an interior of said ring collector electrode;
and
a high voltage source that provides a voltage potential to at least one of said emitter electrode
and said collector electrode to thereby provide a potential difference therebetween.
2. The system of claim 1, wherein:
said emitter electrode is grounded;
said collector electrode is negatively charged by said high voltage source; and
said driver electrode is grounded.
3. The system of claim 1, wherein said emitter electrode and said driver electrode are at a same
voltage potential.
4. The system of claim 1, wherein:
said emitter electrode is at a first voltage potential;
said collector electrode is a second voltage potential different than said first voltage potential;
and

said driver electrode is at a third voltage potential different than said first and second voltage potentials.

5. The system of claim 1, wherein said ring collector electrode and said driver electrode each includes a corresponding upstream end closest to said emitter electrode, and wherein said upstream end of said driver electrode is further downstream than said upstream end of said ring collector electrode.

6. The system of claim 1, wherein said driver electrode is insulated.

7. The system of claim 6, wherein said driver electrode is insulated with a dielectric material, and said dielectric material is coated with an ozone reducing catalyst.

8. The system of claim 6, wherein said driver electrode is insulated with a dielectric material, wherein said dielectric material comprises a non-electrically conductive ozone reducing catalyst.

9. The system of claim 1, wherein said ring collector electrode is elongated in a direction that is generally coaxial with said pin emitter electrode.

10. The system of claim 9, wherein said ring collector electrode is generally tubular.

11. The system of claim 1, wherein said pin emitter electrode tapers in a downstream direction.

12. The system of claim 1, wherein said pin emitter electrode is generally axially aligned with said driver electrode, and wherein said drive electrode is generally radially centered within the interior of said ring collector electrode.

13. An electro-kinetic air transporter-conditioner system, comprising:
an emitter electrode;
a hollow tubular collector electrode located downstream from said emitter electrode;
a driver electrode located at least partially within an interior of said ring collector electrode and generally radially centered within the interior; and
a high voltage source that provides a voltage potential to at least one of said emitter electrode and said collector electrode to thereby provide a potential difference therebetween.

14. The system of claim 13, wherein said emitter electrode tapers from a base to an apex, said apex facing said hollow tubular collector electrode and being generally axially aligned with said driver electrode.

15. The system of claim 14, wherein said collector electrode and said driver electrode each includes a corresponding upstream end closest to said emitter electrode, and wherein said upstream end of said driver electrode is further downstream than said upstream end of said collector electrode.

16. The system of claim 13, wherein said emitter electrode and said driver electrode are at a same voltage potential.

17. The system of claim 13, wherein:
said emitter electrode is at a first voltage potential;
said collector electrode is a second voltage potential different than said first voltage potential;
and
said driver electrode is at a third voltage potential different than said first and second voltage potentials.

18. The system of claim 13, wherein said driver electrode is insulated.

19. An electro-kinetic air transporter-conditioner system, comprising:
an emitter electrode that tapers from a base to an apex;
a ring collector electrode located downstream from said emitter electrode;
an insulated driver electrode located at least partially within an interior of said ring collector electrode and generally radially centered within said interior, an upstream end of said insulated driver electrode further downstream from said emitter electrode than an upstream end of said ring collector electrode; and
a high voltage source that provides a voltage potential to at least one of said emitter electrode and said collector electrode to thereby provide a potential difference therebetween.

20. The system of claim 19, wherein said emitter electrode and said driver electrode are at a same voltage potential.

21. The system of claim 19, wherein:

said emitter electrode is at a first voltage potential;

said collector electrode is at a second voltage potential different than said first voltage potential;

and

said driver electrode is at a third voltage potential different than said first and second voltage potentials.

22. A method for providing an electro-kinetic air transporter-conditioner system, comprising:
 - providing a pin emitter electrode;
 - providing a ring collector electrode downstream from said tapered emitter electrode;
 - providing a driver electrode at least partially within said ring collector electrode;
 - providing a first voltage potential difference between said emitter electrode and said collector electrode and a second voltage potential between said driver electrode and said collector electrode.
23. The method of claim 22, further comprising insulating said driver electrode.
24. The method of claim 22, wherein said first voltage potential difference is substantially the equal to said second voltage potential difference.
25. The method of claim 22, wherein said first voltage potential difference is different than said second voltage potential difference.
26. An electro-kinetic air transporter-conditioner system, comprising:
 - an emitter electrode;

a ring collector electrode located downstream from said emitter electrode, said ring collector electrode including an inner surface which defines an interior of said ring collector electrode;

a driver electrode at least partially surrounded by said inner surface of said ring collector electrode; and

a high voltage source that provides a voltage potential to at least one of said emitter electrode and said ring collector electrode to thereby provide a potential difference therebetween, said potential difference causing a flow of air in a downstream direction from said emitter electrode toward said ring collector electrode and through said interior of said ring collector electrode;

wherein a further potential difference exists between said driver electrode and said ring collector electrode, wherein said further voltage potential difference pushes particles in the flow of air toward said inner surface of said ring collector electrode.

27. The system of claim 26, wherein said drive electrode is insulated.

28. The system of claim 26, wherein said voltage potential difference is substantially equal to said further voltage potential difference.

29. The system of claim 26, wherein said voltage potential difference is different than said further voltage potential difference.

30. The system of claim 26, wherein said emitter electrode includes a base and an apex, said apex pointing downstream toward said interior of said ring collector electrode.

31. An air conditioner system, comprising:
- a pin emitter electrode;
 - a ring collector electrode;
 - an insulated driver electrode located at least partially within an interior of said ring collector electrode; and
 - a high voltage source that provides a voltage potential to at least one of said emitter electrode and said collector electrode to thereby provide a potential difference therebetween.
32. The system of claim 31, further comprising a fan upstream from said emitter electrode or downstream from said collector electrode.
33. The system of claim 31, further comprising a germicidal lamp.
34. The system of claim 31, wherein:
- said emitter electrode is grounded;
 - said collector electrode is negatively charged by said high voltage source; and
 - said driver electrode is grounded.
35. The system of claim 31, wherein said emitter electrode and said driver electrode are at a same voltage potential.
36. The system of claim 31, wherein:
- said emitter electrode is at a first voltage potential;

said collector electrode is a second voltage potential different than said first voltage potential;
and
said driver electrode is at a third voltage potential different than said first and second voltage potentials.

37. An air conditioner system, comprising:

a freestanding housing including at least one inlet vent and one outlet vent; and
an electrode assembly, located within said housing, comprising:
a pin emitter electrode;
a ring collector electrode;
a driver electrode located at least partially within an interior of said ring collector electrode; and
a high voltage source that provides a voltage potential to at least one of said emitter electrode and said collector electrode to thereby provide a potential difference therebetween.

38. The system of claim 37, wherein said collector electrode is located downstream from said emitter electrode, and wherein said emitter and collector electrodes produce an electro-kinetic flow of air from said inlet vent to said outlet vent.

39. The system of claim 37, further comprising a fan upstream from said emitter electrode or downstream from said collector electrode, wherein said fan produces a flow of air from said inlet vent to said outlet vent.

40. The system of claim 37, further comprising a germicidal lamp within said housing, wherein said germicidal lamp irradiates at least a portion of a flow of air from said inlet vent to said outlet vent.

41. The system of claim 37, wherein said emitter electrode and said driver electrode are at a same voltage potential.

42. The system of claim 37, wherein:

said emitter electrode is at a first voltage potential;

said collector electrode is at a second voltage potential different than said first voltage potential;

and

said driver electrode is at a third voltage potential different than said first and second voltage potentials.